GEL'MAN, L. I., Cand Tech Sci -- (diss) "Study of heat exchange in drop concentration of mercury vapor." Len, 1958, 11 pp

(Len Polytechnic Inst im M.I. Kalinin) 100 copies

(KL, 23-58, 105)

GEL'MAN, L. I.

AUTHOR: Gel'man, L.I. (Engineer) 96-3-13/26

TITLE: Heat exchange during dropwise condensation of mercury vapor. (Teploobmen pri kapel'noy kondensatsii rtutnogo para.)

PERIODICAL: Teploenergetika, 1958, No.3. pp.47-50 (USSR).

ABSTRACT: Knowledge of heat exchange during condensation of mercury vapour is of value in the design of heat exchange equipment in power installations using mercury as a working fluid. The mechanism of the process is also of interest from the general standpoint of the condensation of metal vapours. However, little has been published on this subject at home and abroad. An experimental set-up to study the problem is described and illustrated in Fig.1. The mercury vapour generator is heated by electric radiation furnaces. The output is 150 - 170 kg/hr of mercury vapour, which passes through a throttle valve into the experimental condensor. Numerous refinements are provided on the circuit. The experimental mercury condensor consists of an internal tube of 17/8 mm diameter through which cooling water is passed, and an external tube of 42/34 mm diameter. Mercury vapour is fed to the outer tube and is condensed on the surface of the inner tube. The usual temperature measuring arrangements are provided. An experimental outer tube of heat resistant glass was constructed to permit visual observation and high speed cinematography of the process of condensation of mercury vapour. The mechanism of

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condensation of mercury vapour is then described. Dropwise condensation was to be expected because mercury does not wet a steel surface. Condensation was indeed dropwise and the enlargement of a single frame of the kine film shown in Fig.2. gives some idea of the process. The theory of heat transfer during dropwise condensation is briefly discussed and the process of drop formation is described. The results of the experimental investigation are then given. The relation between the heat transfer coefficient and the temperature head obtained during condensation of mercury vapour on vertical and horizontal tubes is given in Fig.3. The results show that the orientation of the condensation surface has practically no influence on the rate of heat exchange. Fig.4. shows the relationship between the heat transfer coefficient and the temperature head for mercury vapour pressures of 0.8 and 0.15 atm. The data of Figs.3 & 4 show that the heat transfer coefficient is inversely proportional to the temperature head and rises with increase in the mercury vapour pressure. A compound graph of the relationship between the rate of heat flow and the pressure for various velocities of mercury vapour is given in Fig.5 and an empirical formula is given. Fig.6 is a combined graph for the whole of the results from which are derived two formulae that are recommended for use during calculations of heat transfer involving dropwise condensation of pure mercury vapour.

Heat exchange during dropwise condensation of mercury vapor. 96-3-13/26

Additional tests were made to investigate the influence of the presence of air on the intensity of heat exchange during condensation of vapour from a mercury air mixture. The apparatus and procedure were as before. It was found from the experimental results that the influence of the partial pressure of the mercury vapour and of the velocity of mercury air mixture were numerically about the same as during the condensation of pure mercury vapour. The results of the tests with air contents up to 12% are given in Fig.7, the dotted line shows the intensity of heat exchange for mercury vapour not containing air. If the concentration of air by weight is up to 1% heat transfer is not impaired. When this concentration is greater than 1%, the graph given in Fig.8. shows that the experimental points lie satisfactorily around a straight line and corresponding formulae are given for heat transfer calculations involving condensation of mercury vapour from a mercury air mixture. There are 8 figures, 1 literature reference (Russian).

ASSOCIATION: Central Boiler and Turbine Institute (Tsentral'nyy Kotloturbinnyy Institut)

AVAILABLE: Library of Congress.

Card 3/3

GEL'MAN, L.I., inzh.; KORNEYEV, M.I., kand.tekhn.nauk

High-pressure marine steam generators. Sudostroenie 24 no.4:59-63 Ap '58. (MIRA 11:4)
(Marine engines)

ARSLANOVA, A.Kh.; BELYAKOV, V.D.; BERGER, B.I.; VASIL'YEV, A.S.; GAVRILOV, N.A.; GEL'MAN, L.I.; KALUGIN, V.P.; KOROSTELEV, V.Ye.; KRAMER, I.I.; MIKHAYLOVSKIY, V.T.; ROGOZIN, I.I.; SEREBRYAKOV, L.V.

Combined vaccination with chemical and living vaccines. Voen.-med. zhur. no. 1:78-80 Ja '60. (MIRA 14:2)
(VACCINATION)

35048
S/693/61/000/000/006/007
D203/D302

26.5500

AUTHOR: Gel'man, L.I.

TITLE: Experimental investigation of heat transfer in condensation of mercury vapor

SOURCE: Kutateladze, S.S. ed., Voprosy teplootdachi i gidravliki dvukhfaznykh sred; Sbornik statey, Moscow, Gosenergoizdat, 1961, 156-177

TEXT: The test rig consisted of an electrically heated vapor generator, three condensers, valves and a cooling water system with two electric heaters and two measuring tanks. Vapor was first passed to the experimental condenser, in which cooling water flowed through the inner steel tube. Temperature of the cooling surface was obtained by adding a calculated correction to the readings of two thermocouples built into the wall of the tube. A special technique was developed for fitting these thermocouples. Temperature and pressure of the vapor around the tube was also recorded. The mean velocity of the vapor w'' was calculated from the mean flow.

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Experimental investigation of ...

End heat losses did not exceed 0.5% and the general theory of errors was used to assess the accuracy of the tests. There is no full theory for drop condensation of mercury. The theoretical formula of S.S. Kutateladze is approximate and valid only for vapor without motion. The process was filmed while the instrument recordings were taken at the same time to tie up the qualitative characteristics with the numerical data. The droplets usually began to move before reaching their breakaway size. Due to this motion, only 3.6% of the surface was covered by visible drops. The number of centers of condensation (droplets) was about 5.2×10^5 per m^2. This number and the frequency of droplet formation were practically independent of the heat load, but the projected are of the drops increased with the heat load. The coefficient of heat transfer was found to be inversely proportional to the temperature difference, Δt, between the vapor and the cooling surface, and increased with the vapor pressure p. It was found that Eq. $\frac{\alpha}{p^{1/3}[1+(\gamma/\omega)^{1/3}]} = f(\Delta t)$

Card 2/3

and that the heat load q can be given by Eq.(5)
$q = 1,2 \cdot 10^5 p^{1/3} [1 + (\gamma\omega)^{n1/3}] [kka\sqrt{M}^2 q]$ for all the 150 test points. Percentage of air by weight ξ above 1% produced a reduction of heat transfer according to formula Eq.

$$\frac{\alpha \xi^{0,2}}{p^{1/3}[1 + (\gamma\omega)^{1/3}]} = f(\Delta t)$$ which also holds for pure mercury vapor if ξ is put equal to unity. About 0.05% of magnesium by weight is needed to intensify heat transfer into boiling mercury in a boiler. Tests showed that only traces of Mg are carried away with the vapor. These are usually 20 to 40 times less than the minimum amount to produce wetting of the cooling surface. Thus droplet condensation with its higher coefficient of heat transfer is always ensured. There are 5 tables, 18 figures and 7 Soviet-bloc references.

Card 3/3

X

S/096/63/000/004/005/010
E194/E455

AUTHORS: Gel'man, L.I., Candidate of Technical Sciences,
Kolosov, V.V., Candidate of Technical Sciences,
Tyul'nev, I.I., Engineer

TITLE: Heat circuits of binary mercury-water nuclear power stations

PERIODICAL: Teploenergetika, no.4, 1963, 49-52

TEXT: The binary mercury-steam cycle promises higher thermal efficiency of nuclear power stations, although mercury can only be used directly in a fast neutron reactor: in other types an additional heat-transfer medium is required. A thermal block diagram is suggested of a power station with an output of 180 MW. Of this, the mercury set working at an evaporation rate of 4015 t/hour generates 80 MW; the steam set generates 100 MW with steam conditions of 35 atm, and 435°C, obtained by a combination of cooling water from the mercury condenser and feed-water heating from the mercury turbine. Because of the interdependence of the mercury and steam circuit conditions it is quite a complicated matter to select the optimum cycle. The overall thermal

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R000514710005-8"

Heat circuits of binary ...

efficiency is affected by the number of steam superheaters and on the positions from which the mercury vapor is tapped to heat them. This problem is investigated theoretically by formulating a balance of the work that can be obtained from the cycle, allowing for the quantity of heat used. Comparisons can then be made between equipments with various numbers of super-heaters, and the best positions of the tapping points determined. By way of example, a binary cycle is considered with a steam turbine of 100 MW, steam conditions of 90 atm, 535°C, feed-water temperature 220°C, and mercury vapor at 236 atm, 600°C, with a pressure of 0.6 atm in the mercury condenser. The use of additional mercury superheaters gives diminishing advantages and their number should not exceed 3. Indeed, the transition from two to three superheaters increases the overall efficiency by less than 1% and considerably complicates the heat circuit, so that the best number of steam superheaters is 2. The first tapping point should be in the penultimate stage of the turbine; the second should be in the stage whose mercury vapor conditions are such that the steam can be heated to the required temperature. In this case the

Heat circuits of binary ...

efficiency of the mercury part of the installation is about 7% higher than in the case of single stage superheat. A factor which limits the potential use of mercury in nuclear power stations is the low critical heat flux which, for magnesium amalgams is of the order of 4×10^5 kcal/m^2hour. Further experimental work is required for solving the problem of intensifying heat exchange of boiling mercury. Loadings of 1.6×10^6 kcal/m^2hour have been obtained in the laboratory. The use of a binary mercury/steam cycle can raise the overall efficiency of nuclear power stations to 45 to 51%, which is much higher than the efficiency obtained with other heat-transfer media and so the method is, in principle, promising. There are 3 figures and 1 table.

Card 3/3

L 1050-66 EWT(1)/EPF(c)/ETC/EPF(n)-2/EWG(m) WW/GS

ACCESSION NR: AT5016894 UR/0000/64/000/000/0350/0362

AUTHOR: Borishanskiy, V. M.; Gel'man, L. I.; Zablotskaya, T. V.; Ivashchenko, N. I.; Kopp, I. Z.

TITLE: Investigation of heat transfer during the flow of mercury through horizontal and vertical tubes

SOURCE: Konvektivnaya teploperedacha v dvukhfaznom i odnofaznom potokakh (Convective heat transfer in two-phase and single-phase flows). Moscow, Izd-vo Energiya, 1964, 350-362

TOPIC TAGS: mercury, heat transfer, liquid flow, forced flow

ABSTRACT: The transfer of heat to mercury is studied during forced flow in horizontal and vertical tubes. The experimental equipment and procedure are described briefly. The following parameters are measured during the experiments: the rates of flow of the liquid, the power input for heating the working section of the equipment, the temperature of the mercury entering and leaving the working section, the temperature fields at various points through the cross section of the tube, the wall temperature at these points and along the tube, the temperatures within and on

Card 1/2

L 1050-66

ACCESSION NR: AT5016894

0

the surface of the insulation for the working section. The results are tabulated. Experimental and theoretical data show excellent agreement. Heat transfer beyond the section of thermal and hydrodynamic stabilization in the absence of thermal contact resistance for Péclet numbers from 10^3 to $2 \cdot 10^4$ may be calculated from the formula $Nu = 7.5 + 0.005Pe$. A relationship is found between thermal contact resistance and Reynolds numbers for a vertical tube. Orig. art. has: 9 figures, 5 formulas, 4 tables.

ASSOCIATION: none

SUBMITTED: 17Nov64 ENCL: 00 SUB CODE: TD, ME

NO REF SOV: 007 OTHER: 004

Card 2/2 DP

GEL'MAN, L.I., kand. tekhn. nauk; GASILOVSKIY, A.N., inzh.

Power and engineering equipment of a system with a mercury heat carrier. Energomashinostroenie 10 no.6:37-39 Je '64.
(MIRA 17:9)

GEL'MAN, [illegible]; KISHKO, I.S.

Patternage method for determining the yield of cut [illegible] from knitted fabrics. Tekst. prom. 24 no.11:71-72 N '64. (MIRA 17:12)

1. Ispolnyayushchiy obyazannosti glavnogo inzhenera Mikashevskoy trikotazhnoy fabriki (for Gel'man). 2. Glavnyy bukhgalter Mikashevskoy trikotazhnoy fabriki (for Kishko).

L 5275-66 EWT(1)/EPA(s)-2/EWT(m)/EPF(c)/ETC/EPF(n)-2/EWG(m)/EWP(t)/EWP(b) IJP(c)
ACC NR: AP5025683 JD/WW/JG SOURCE CODE: UR/0286/65/000/018/0030/0030

AUTHORS: Kanayev, A. A.; Gel'man, L. I.; Kopp, I. Z.

ORG: none

TITLE: A method for intensifying heat exchange during boiling of mercury. Class 17, No. 174643 [announced by Central Scientific Research Boiler and Turbine Institute imeni I. I. Polzunov (Tsentral'nyy nauchno-issledovatel'skiy kotlo-turbinnyy institut)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 30

TOPIC TAGS: mercury, heat exchange

ABSTRACT: This Author Certificate presents a method for intensifying heat exchange during boiling of mercury. To increase the intensity of heat flow, the heat exchange surface is kept in contact with mercury up to the temperature of 600-800C. This temperature is maintained for over 25 hours.

SUB CODE: TD/ SUBM DATE: 10Aug64/ ORIG REF: 000/ OTH REF: 000

Card 1/1 UDC: 621.565.94:536.248.2:669.79

L 38782-66 EWT(1)/EWT(m)/T/EWP(f) DJ/RM/JW

ACC NR: AP6024818 SOURCE CODE: UR/0096/66/000/008/0043/0047

AUTHOR: Gel'man, L. I. (Candidate of technical sciences ; Smolkin, Yu. V. (Engineer)

ORG: Central steamturbine institute (Tsentralnyy kotloturbinnyy institut) ; deceased)

TITLE: Thermodynamic calculation of a gas turbine unit using an electronic digital computer

SOURCE: Teploenergetika, no. 8, 1966, 43-47

TOPIC TAGS: gas turbine, turbine design, closed cycle gas turbine, thermodynamic calculation, entropy

ABSTRACT: A computer method was developed for calculating the optimum thermodynamic design of a closed-cy gas turbine unit using nitrogen as the working fluid. Emphasis was placed on the real properties of the gas. Procedures for calculating the final temperature after isentropic expansion and the enthalpy are given. Calculations were made for inlet pressures of 2—10 Mn/m^2, at a turbine inlet temperature of 1073.16K and a compressor inlet temperature of 298.16K. Plots were obtained for the variation in the internal work as a function of the inlet pressure and expansion ratio, and the variation in the compressor temperature gradient as a function of the turbine inlet pressure. It was shown that at an expansion ratio of 2.5, the internal efficiency at a turbine inlet pressure of 10 Mn/m^2 is 2.81% higher than that of an ideal gas. At a ratio of 5.5, it is only 1.48% higher. It is concluded that an allowance for the real-gas properties at turbine inlet

Card 1/2 UDC: 621.438.681.142.35:001.24

L 38782-66

ACC NR: AP6024818 0

pressures higher than 2 Mn/m^2 is necessary when nitrogen is used as the working medium. [PV]

SUB CODE: 13,20/SUBM DATE: none/ ORIG REF: 002/ OTH REF: 001/

Card 2/2

GEL'MAN, L. S.

GEL'MAN, L.S., inzhener.

Remarks on new principles of construction and arrangement of a substation. Elek. sta. 25 no.6:59 Je '54. (MLRA 7:7)
(Electric substations)

BULGARIA/Nuclear Physics - Installations and Instruments. C
Methods of Measurement and Research.

Abs Jour : Ref Zhur Fizika, No 12, 1959, 26730

Author : Gel-Man, M., Rosenbaum, Ye.
Inst :
Title : Elementary Particles

Orig Pub : Fiz.-matem. spreaniye, 1958, 1, No 3-4, 89-118

Abstract : See Referat Zhur Fizika, 1958, No 3, 5358.

Card 1/1

GEL'MAN, M.I.; BIRANIN, V.G.; BELYAYEVSKIY, A.G.; ANDREYEV, A.I.; [redacted]OV, V.P.; PETROV, V.I.

On new technological processes. Der.prom.4 no.1:19-21 Ja'55. (MLRA 8:3)

1. Ust'-Izhorskiy fanernyy zavod.
(Ust'-Izhora--Plywood)

GEL'MAN, M.I., inzh.; TUPITSYN, Yu.S., inzh.; EL'BERT, A.A., inzh.

Bartrev's method for manufacturing hardboards of wood shavings.
Der. prom. 8 no.7:25-26 Jl '59. (MIRA 12:9)

1.Ust'-Izherskiy fanernyy zavod.
(Hardboard)

BOTVINIK, Yefim Solomonovich; DMITRIYEV, Oleg Aleksandrovich; GEL'MAN, Moisey Isaakovich; TUPITSIN, Yuriy Semenovich; EL'BERT, Aleksandr Aronovich; VARAKSIN, F.D., red.; LEBEDEVA, I.D., red. izd-va; PARAKHINA, N.L., tekhn. red.

[Use of the continuous method for the manufacture of particle boards]Proizvodstvo struzhechnykh plit nepreryvnym sposobom. Moskva, Goslesbumizdat, 1961. 98 p. (MIRA 15:2)
(Hardboard) (Assembly-line methods)

GEL'MAN, M.L.

Recent find of gedrite in the U.S.S.R. Dokl. AN SSSR 141 no.3:709-712 N '61. (MIRA 14:11)

1. Severo-Vostochnoye geologicheskoye upravleniye. Predstavleno akademikom D.S. Korzhinskim.
(Lesser Anyuy Valley—Gedrite)

GEL'MAN, M.L.

Reflection of the microheterogeneity of the magmatic melts in the structure of augen-diorite enriched with titanium. Geokhimiia no.2:147-153 '62. (MIRA 15:3)

1. North-Eastern Geological Department, Magadan.
(Magma) (Titanium) (Diorite)

GEL'MAN, M.L.

Triassic diabase formation in the Anyuy Zone (Chukchi National Area). Geol. i geofiz. no.2:127-134 '63. (MIRA 16:5)

1. Severo-Vostochnoye geologicheskoye upravleniye, Magadan.
(Chukchi National Area—Diabase)

GEL'MAN, M.L.

Relation between igneous activity and granitoid intrusions in the western Chukchi Peninsula. Izv. AN SSSR. Ser. geol. 28 no.12:41-58 D'63. (MIRA 17:2)

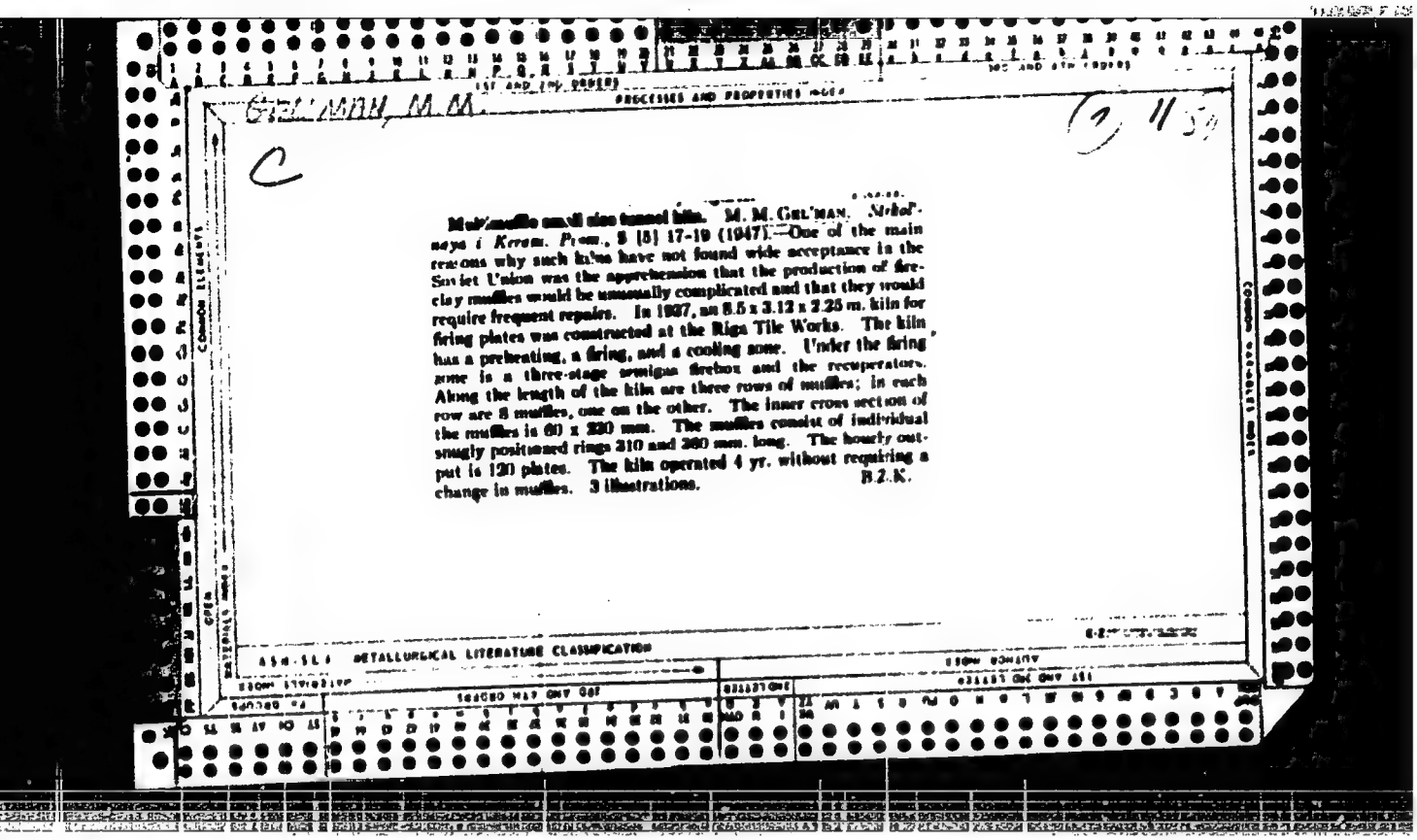
1. Severo-Vostochnoye geologicheskoye upravleniye, Magadan.

GEL'MAN, M.L.

Plutonic facies and formation phases of the granitoid complex of the Anyuy zone. Dokl. AN SSSR 149 no.6:1397-1400 Ap '63.
(MIRA 16:7)

1. Severo-vostochnoye geologicheskoye upravleniye. Predstavleno akademikom D.I.Shcherbakovym.

(Chukchi Peninsula—Granite)
(Chukchi Peninsula—Geology, Stratigraphic)



GEL'MAN, M.M.

C

PROCESSES AND PROPERTIES INDEX

Multimuffle annular tunnel kiln. M. M. GEL'MAN. *Steklo i Keram. Prom.*, 5 [5] 17-19 (1947).—One of the main reasons why such kilns have not found wide acceptance in the Soviet Union was the apprehension that the production of fireclay muffles would be unusually complicated and that they would require frequent repairs. In 1937, an 8.5 x 3.12 x 2.25 m. kiln for firing plates was constructed at the Riga Tile Works. The kiln has a preheating, a firing, and a cooling zone. Under the firing zone is a three-stage semigas firebox and the recuperators. Along the length of the kiln are three rows of muffles; in each row are 8 muffles, one on the other. The inner cross section of the muffles is 60 x 220 mm. The muffles consist of individual snugly positioned rings 210 and 260 mm. long. The hourly output is 120 plates. The kiln operated 4 yr. without requiring a change in muffles. 3 illustrations. B.Z.K.

METALLURGICAL LITERATURE CLASSIFICATION

AGALAROV, Ch.S.; ALESKEROV, S.A.; GAL'MAN, M.M.; GINZBURG, M.Ya.; IBRAGIMOV, I.S.; ZUL'FUGARZADE, E.; MAMEDLI, E.M.

"Information converter for electronic digital computers" by E.I. Gitis. Reviewed by Ch.S. Agalarov and others. Izm.tekh. no.7: 64 Jl '62. (MIRA 15:6)

(Electronic digital computers)
(Gitis, E.I.)

45642

S/877/62/001/000/004/005
D201/D308

9,7500

AUTHORS: Aleskerov, S.A., Gel'man, M.M. and Kasumov, R.Ya.

TITLE: A fast generator-counter system

SOURCE: Akademiya nauk Azerbaydzhanskoy SSR. Vychislitel'nyy tsentr. Trudy, v. 1, 1962, 38-45

TEXT: The authors describe the circuits and the operation of a nanosecond pulse generator and an associated binary counter. The pulse generator consists of a crystal controlled oscillator, buffer stage, used also as a suppressor-controlled gate, limiter and inductive differentiating stage and finally a pulse-shaping output stage. All stages have pulse-transformer coupling. Pulses of nanosecond duration are obtained from heavily damped transients in the pulse transformer of the differentiating stage and by diode loading of the output stage. Ferrite cores are used throughout. The output pulse amplitude is about 20 v, repetition frequency of the order of 8 Mc/s, pulse duration 0.04 μsec. The binary counter following the pulse generator consists of two flip-flops, the first with HF anode

Card 1/2

S/877/62/001/000/004/005
D201/D308

A fast generator-counter system

circuit correction, separated by pulse amplifying stages. The circuit utilizes valves with small stray and intelectrode capacitances. The first flip-flop operates at pulse repetition frequencies up to 5 Mc/s, the second flip-flop at up to 2 Mc/s, with output pulse amplitudes of about 60 v. The carry pulse is obtained by RC differentiation, amplitude about 15 v, duration between 0.04 and 10 microseconds. Tolerance of components is ± 20%. The above generator counter system may be used in time-modulator digital-analog and analog digital converters. There are 9 figures.

Card 2/2

ALESKEROV, S.A.; GEL'MAN, M.M.; KASUMOV, R.Ya.

A high-speed generator-counter system. Trudy Vych. tsentra AN Azerb. SSR 1:38-45 '62. (MIRA 15:11)
(Radio measurements)
(Pulse techniques (Electronics))

L 19679-65 EWT(d)/EED-2/EWP(1) Po-4/Pq-4/Pg-4/Pk-4 IJP(c)/AEDC(a)/SSD/BSD/AFWL/
BSD(a)-5/ASD(c)/AEMD(a)/AFMDC/AFETR/RAEM(a)/AFTC(b)/RAEM(d)/ESD(c)/ESD(dp) GG/BB
ACCESSION NR: AP4038886 S/0119/64/000/005/0012/0013

AUTHOR: Abrosimov, I. L.; Alenkerov, S. A.; Akhundov, E. I.; Gel'man, M. M.

TITLE: Semiconductor analog-to-digital voltage converter 16 B

SOURCE: Priborostroyeniye, no. 5, 1964, 12-13

TOPIC TAGS: automatic control, industrial automatic control, analog digital converter, digital computer, semiconductor analog digital converter

ABSTRACT: A new voltage-to-code converter is intended for introducing process-sensor information into a digital computer for the purpose of centralizing supervision and control of the process. The well-known principle of comparing the input voltage with a linearly-variable voltage is used; the input variable is converted into a time interval. The linearly-variable voltage is obtained by integrating a square pulse; a square-pulse shaper and a d-c amplifier perform

Card 1/2

L 19679-65
ACCESSION NR: AP4038886

this operation. A transistorized comparison device yields the time intervals proportional to the running value of the input voltage. A special transistorized gate is controlled by the comparator pulses and turns a pulse generator on and off. The latter produces 5-v, 0.25-microsec pulses at a repetition frequency of 1 mc. The number of pulses equivalent to an input voltage value is counted by a transistorized binary counter. Max input voltage, 20 v; conversion frequency, 300 cps; ambient temperature, up to 40C; claimed apparatus error, 0.2%. Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: DP, EC NO REF SOV: 003 OTHER: 000

Card 2/2

GEL'MAN, M.M.; TAVROVSKIY, A.D.

At the Japanese Industrial Exhibition in Moscow. Izm.tekh. no.10:38-43 O '65. (MIRA 18:12)

8(2)

AUTHORS: Fleyshman, L. S., Engineer, Gel'man, M.V., Engineer SOV/105-58-11-16/28

TITLE: Investigation of Inverter Duty of Type RTUV-500 x 6 (Issledovaniye invertornogo rezhima vypryamiteley RTUV-500 x 6)

PERIODICAL: Elektrichestvo, 1958, Nr 11, pp 43 - 47 (USSR)

ABSTRACT: In this paper the causes for an unstable operation of an inverter rectifier are exposed. The investigations were carried out in the Laboratory for Mercury-Arc Rectifiers of the "Uralelektroapparat" plant. This paper also includes results of the tests which were made with special measures for increasing the reliability of the inverter mode of operation. When making a choice between different circuit conditions of an inverter unit, the following three circuits come into the picture : 1) Delta, six phase, double way. This circuit was tested under operational conditions on the Yuzhno-Ural'skaya and Sverdlovskaya zheleznaya doroga (Sverdlovsk Railroad). 2) Three-phase diametric double

Card 1/4

way. This was tested on the test stands of the plant laboratory and on the Sverdlovsk railroad. 3) Delta, six phase fork. This circuit is almost exclusively used abroad (Ref 1) in inverter units. R.B.Gafirov, Z. Kh. Chernin and Ye.V.Libina, Engineers at the Laboratory for Mercury-Arc Rectifiers of the "Ural-elektroapparat" plant, assisted in the work. The experimental array is described. Causes for arc-through are as follows: A too short period for the regeneration of the controlling capability of the grid. 2) Arc-back. 3) Extinction of the excitation. 4) Inductance in the grid circuit. 5) Loss of control during voltage rise at the valve. The majority of arc-throughs in a three-phase diametric double way circuit were recorded for the moment of ignition of the inverse phase valve. The cause of such arc-throughs is found in the rapid rise of the direct voltage when the de-ionization is not yet completed. For this reason the test stand circuits(which are intended for checking the valves for an inverter operation) must be in a

position to supply this positive peak. The absence of the cathode spot in ignitrons during the non-conducting period permits to draw the conclusion that for ignitrons operating in aninverter regime the loss of control capability during the direct voltage rise is not dangerous, this fact indicating their suitability for such a mode of operation. The investigations lead to the following conclusions: 1) The occurrence of a considerable number of arc-throughs at the ignition of the inverse-phase valve made necessary a check of the requirements placed upon the test stand circuits. 2) An establishment of circuits shunting the valve and of a reactor coil in the cathode branch with an inductivity of 50 to 100 mH considerably increases the reliability of the RVMV-500 x 6 rectifier in an inverter mode of operation. 3) The load level attained (500 A continuously, 700 A for 15 minutes, and 800 A for 10 minutes) guarantees a regenerative braking operation of the rectifier. 4) The results of the test runs of the inverter enabled the plant to construct three test inverter units for the substations Goytkh and Tverskaya

Investigation of Inverter Duty of Type RMNV -500 x 6 SOV/105-58-11-10/28

of the Severo-Kavkazskaya zheleznaya doroga (North Caucasus Railway) and the substation Neyvo-Rudyanka of the Sverdlovskaya zheleznaya doroga (Sverdlovsk Railway). The investigation was carried out due to the initiative of Ye.M.Glukh, Candidate of Technical Sciences. There are 8 figures and 5 references, which are Soviet.

ASSOCIATION: Zavod "Uralelektroapparat" (Plant "Uralelektroapparat")

SUBMITTED: May 14, 1957

Card 4/4

GEL'MAN, M.V., inzh.

Increase in the stability of the excitation of mercury rectifiers using semiconductor ignitrons. Vest. elektroprom. 34 no.2:17-21 F '63. (MIRA 16:2)
(Mercury-arc rectifiers)
(Electric railroads—Current supply)

AKODIS, Mikhail Mironovich dr. tekhn. nauk, prof. GEL'MAN, Moris Vladimirovich, aspirant

Study of the grid circuit of a multistage frequency converter. Izv. vys. ucheb. zav. elektromekh. 7 no.4:428-435 '64 (MIRA 17:7)

1. Kafedra tekhniki vysokikh napryazheniy Ural'skogo politekhnicheskogo instituta. 2. Zaveduyushchiy kafedroy tekhniki vysokikh napryazheniy Ural'skogo politekhnicheskogo instituta (for Akodis).

L 22186-66 EWA(h)/EWT(1)
ACC NR: AP6012959 SOURCE CODE: UR/0143/65/000/003/0014/0022

AUTHOR: Akodis, M. M. (Doctor of technical sciences; Professor); Gel'man, M. V. (Engineer)

53
B

ORG: Ural Polytechnic Institute im. S. M. Kirov (Ural'skiy politekhnicheskiy institut)

TITLE: Automatic control of a sequential frequency converter 25

SOURCE: Izvestiya vysshikh uchebnykh zavedeniy. Energetika, no. 3, 1965, 14-22

TOPIC TAGS: automatic control, electronic circuit, frequency converter, electronic rectifier, electric resistance, electric inductance, electric capacitance

ABSTRACT: The possibilities of automatic control of ion or semiconductor sequential inverters, so that they may be used for technological heat processes, is analyzed. An approximate method is developed for design of a sequential inverter, loaded with a parallel oscillating circuit. Control criteria are analyzed, with the goal of keeping the operation of the inverter constant with variation in the load. Contactless operation, most simply achieved by changing the control frequency, is seen to be preferable to contact control by switching of compensating capacitances. A phase sensitive rectifier can be used as a transducer in controlling the frequency of the inverter, in order to keep it in resonance with the frequency of the load circuit. This type of control is most suitable where there are only slight variations of the ratio of load resistance to inductance in normal operation.

Card 1/2 UDC: 621.314.26-523.2

L 22186-66

ACC NR: AP6012959 O

Where variations in r_1/L_1 are greater, control can be achieved better by using constancy of inverter input current or of voltage at the commutating capacitance, which also leads to constancy of power in the load circuit, as a control criterion. Orig. art. has: 6 figures, 22 formulas, and 1 table. [JPRS]

SUB CODE: 09 / SUBM DATE: 27Apr64 / ORIG REF: 003 / OTH REF: 001

Card 2/2 nst

AKODIS, M.M., doktor tekhn. nauk, prof.; GEL'MAN, M.V., inzh.

Use of regulated silicon rectifiers in ultrasonic frequency converter networks. Elektrichestvo no.3:26-30 Mr '65. (MIRA 18:6)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

L 07069-67 EWT(1)
ACC NR: AP6019234 (N) SOURCE CODE: UR/0144/66/000/002/0223/0225

AUTHOR: Gel'man, M. V.; Mineyev, V. A. 67 B

ORG: None

TITLE: Investigation of semiconductor master oscillator for a three-cell series inverter 15

SOURCE: IVUZ. Elektromekhanika, no. 2, 1966, 223-225

TOPIC TAGS: semiconductor device, frequency control, ion current, electric current, transistorized oscillator, frequency converter

ABSTRACT: An investigation of a master oscillator, the master stage of which consisted of a three phase semiconductor converter with one master cell and two slave cells, was made. Slave cells were synchronized by feeding part of the collector coil voltage of the master cell to the collector coil circuit of the slave cell transformers. The moment of saturation of the transformer cores can be varied and any phase shift can be produced, regardless of the feed voltage. The frequency of oscillations produced is linearly dependent on the feed voltage over a rather wide range. Rapid frequency control is achieved by connecting a control semiconductor triode into the feed circuit of the master stage. Individual control of the electron and ion currents flowing in the grid circuit of the inverter gate is possible. The master oscillator was used in a three-cell frequency converter circuit. Two variants were made,

Card 1/2 UDC: 621.314.6.+621.501.

L 07069-67

ACC NR: AP6019234 O

designed for 2,500 and 8,000 cycle per second operation. Frequency control of ± 25% of designed frequency was provided for in both cases. The investigation demonstrated that the master oscillator could provide independent frequency and control pulse duration regulation while ensuring a high degree of ignition precision and improved conditions for deionization of the gate. Orig. art. has: 5 formulas, 2 figures and 1 table.

SUB CODE: 09/SUBM DATE: 24Jan64/ORIG REF: 002/OTH REF: 001

Card 2/2 ✓C

ACC NR: AT6022766 (A) SOURCE CODE: UR/2563/65/000/258/0161/0171

AUTHOR: Gel'man, M. Z.; Ryabov, B. M.

ORG: none

TITLE: Ionization characteristics of polymerized insulation

SOURCE: Leningrad. Politekhnicheskiy institut. Trudy, no. 258, 1965. Vysokovol'tnaya izolyatsiya liniy i apparatov (High voltage insulation of lines and apparatus), 161-171

TOPIC TAGS: electric insulation, electric discharge ionization, polymer dielectric

ABSTRACT: On the basis of well-known J. Berks, J. Shulman, and S. Whitehead works, it is theoretically found that the initial ionization voltage (IIV) in a polymerized insulating material can be raised by impregnating the insulation with a high-electric-strength gas, by the use of a higher vacuum in drying and pouring the insulation, and other processing techniques. A theoretical relation between IIV, the dielectric constant, and the gas-inclusion (bubble) size explains the ionization-voltage values of 2—10 kv often observed in practice. A further analysis shows that:

Card 1/2

ACC NR: AT6022766

(1) The IIV and ionization intensity ΔQ_x in a near-uniform field are determined by the inclusions size, and the thickness and ε of the solid dielectric; the ionization characteristics are not only the functions of the applied voltage but also are determined by statistical voltage distribution among the ionized inclusions; the relative ionization intensity I_s is, too, a function of the statistical voltage distribution; (2) The number of discharges per second as a function of applied voltage has a region with $n \approx (\frac{U}{U_0} - 1)^{\alpha}$, where U_0 - voltage across the gas bubble, $\alpha = 1.3-2.0$; (3) The $I_s(U)$ has a region in which $I_s \approx (\frac{U}{U} - 1)^{\beta}$, where $\beta = 1.4-2.6$.

Orig. art. has: 8 figures, 35 formulas, and 2 tables.

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 004 / OTH REF: 001

Card 2/2

ACC NR: AR5016460 SOURCE CODE: UR/0124/65/000/012/B000/B000

AUTHOR: Gel'man, N. A.

TITLE: Characteristics of semibounded fan-shaped jets

SOURCE: Ref. zh. Mekhanika, Abs. 12B474

REF SOURCE: Nauchn. raboty in-tov okhrany truda VTSSPS, vyp. 2(34), 1965, 6-11

TOPIC TAGS: turbulent jet, thermodynamics, flow characteristic

ABSTRACT: Data are given from an experimental investigation of nonisothermal semibounded fan-shaped turbulent jets. The velocity profiles and temperature profiles in the transverse cross sections of the jet are determined as well as the variation in the maximum velocity and maximum excess temperature along the radius. The profiles of relative velocities $\bar{u}$ and excess temperature $\bar{v}$ as a function of y/x are practically universal. The relationship between these quantities is $\bar{v}=\sqrt{\bar{u}}$ which is characteristic for free jets. Approximate formulas are proposed for calculating these jets which are strictly true only for free fan-shaped jets. A. S. Ginevskiy. [Translation of abstract]

SUB CODE: 20

Card 1/1

GLUKHAREV, A.I., inzh. (Engel's); FOYGEL', L.A. (Engel's); GEL'MAN, M.B., inzh. (Engel's)

Calculation of current in an R-L circuit with half-wave rectification. Elektrichestvo no.5:58-60 My '60. (MIRA 13:9)

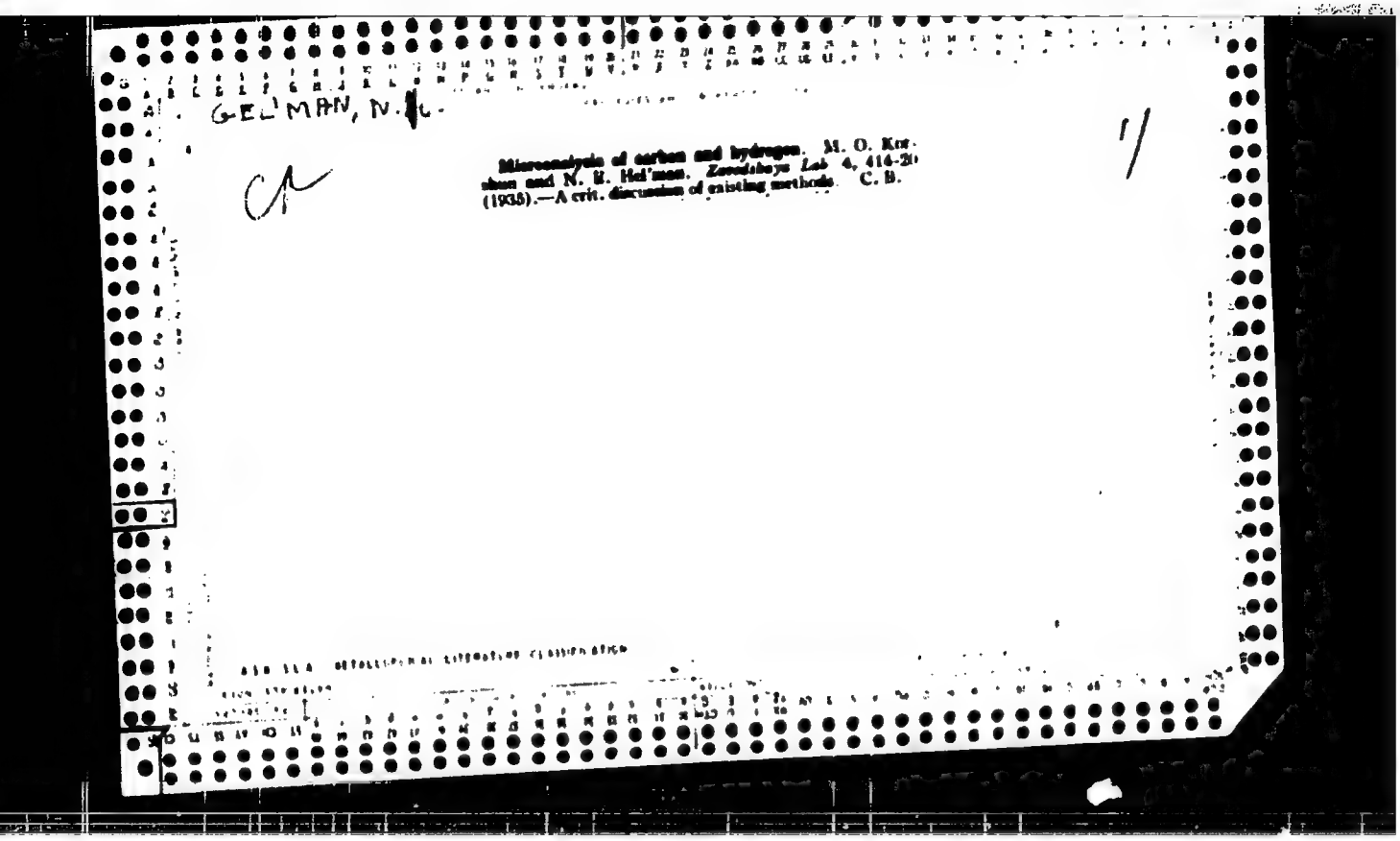
(Electric current rectifiers)
(Electronic circuits)

GEL'MAN, N S

Biokhimiya Rasteniy; Bibliograficheskiy Ukazatel' Otechestvennoy Literatury, 1738-1952. Sost.: N. S. Gel'man I G. D. Zenkevich. Moskva, Akademkniga, 1956.

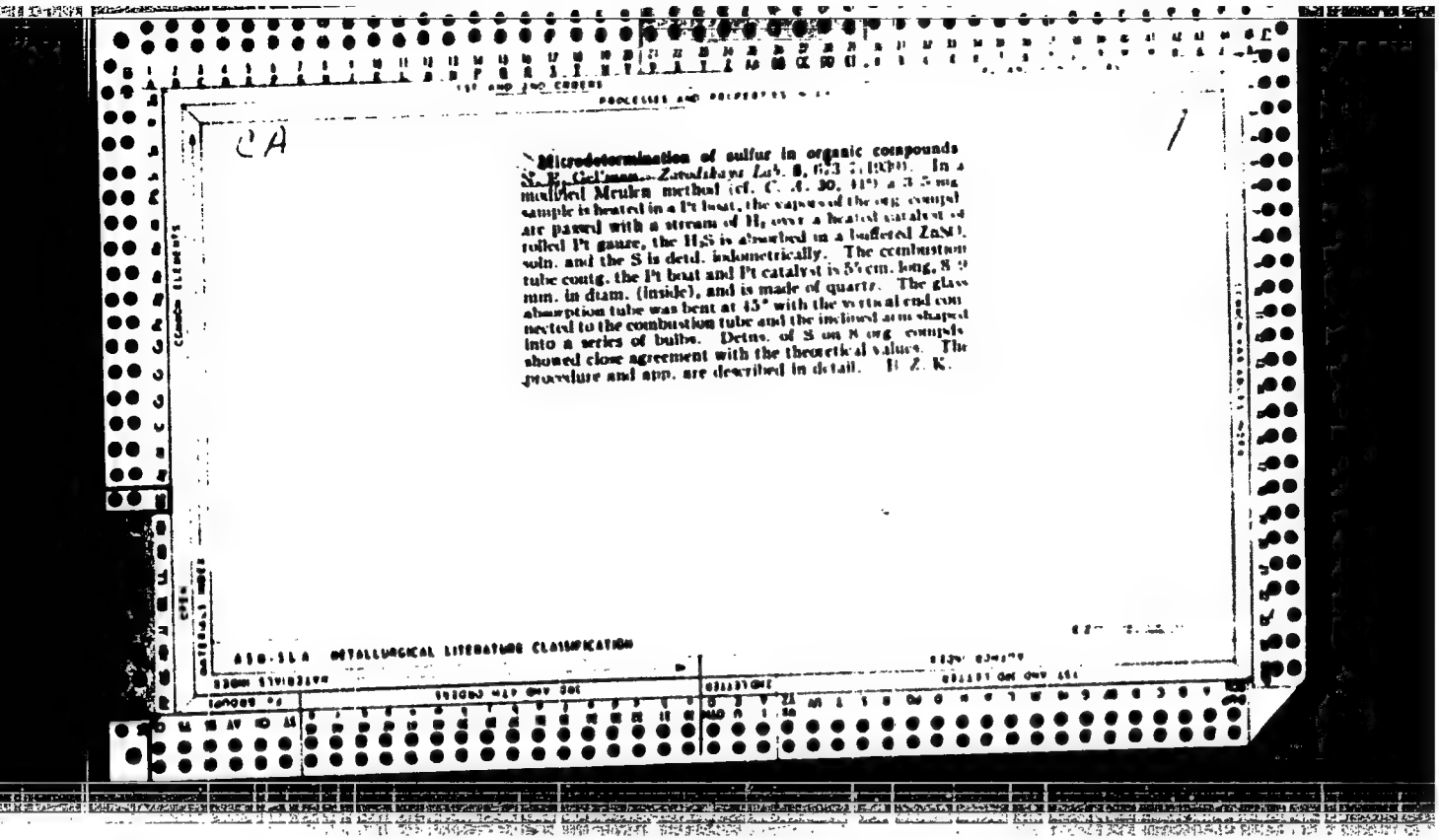
394 P. 27 cm. (Materialy Po Istorii Biologicheskikh Nauk v SSSR).

At head of Title: Akademiya Nauk SSSR. Otdeleniye Biologicheskikh Nauk, I Otdel Biobibliografii Uchenykh SSSR. Fundamental'noy Biblioteki Obshchestvennykh Nauk.



GEL'MAN, N. E.

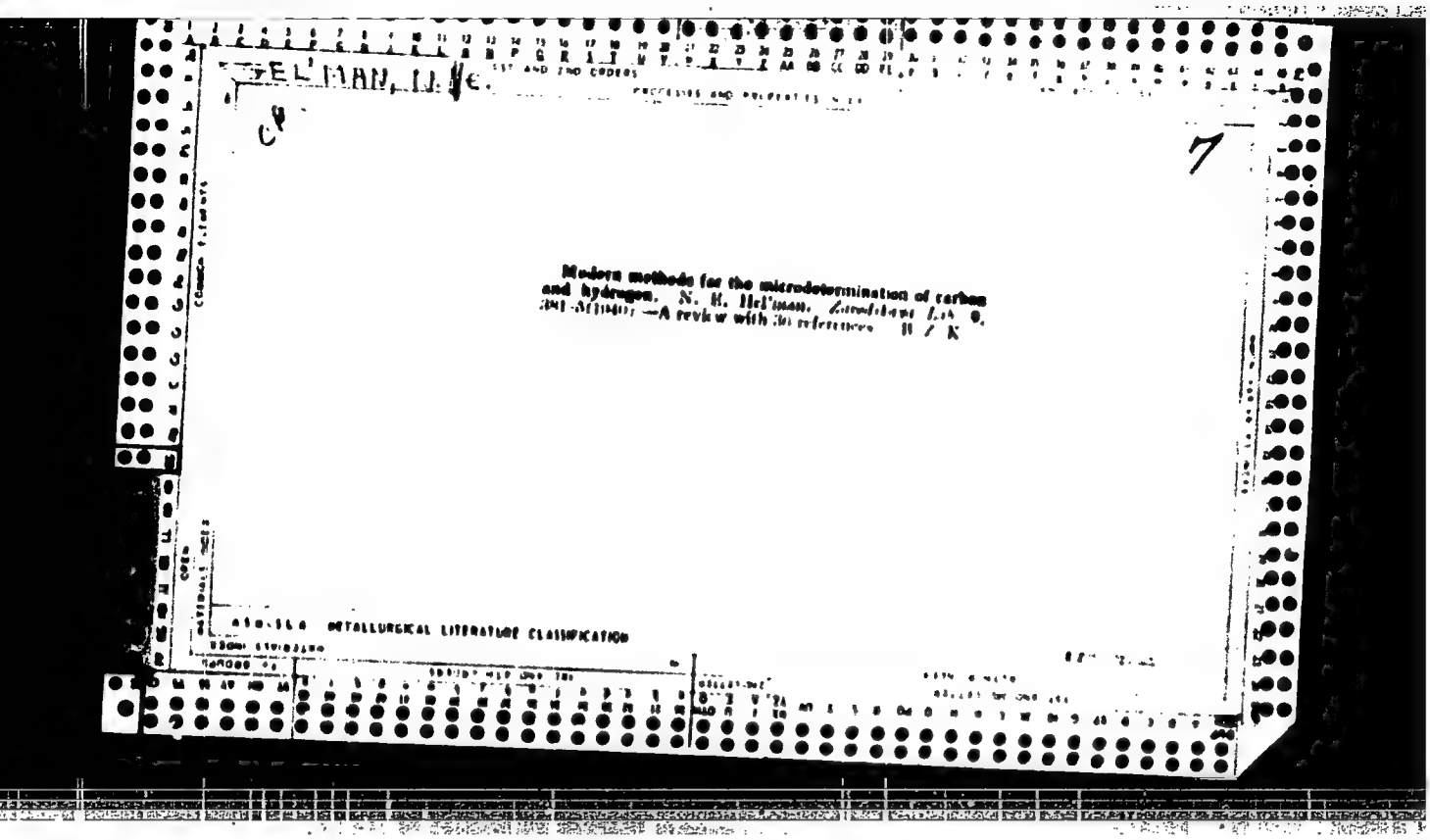
Microanalysis of carbon and hydrogen. M. O. Korshun and N. E. Hel'man. *Zavodskaya Lab.* 4, 414-20 (1935).—A crit. discussion of existing methods. C. B.

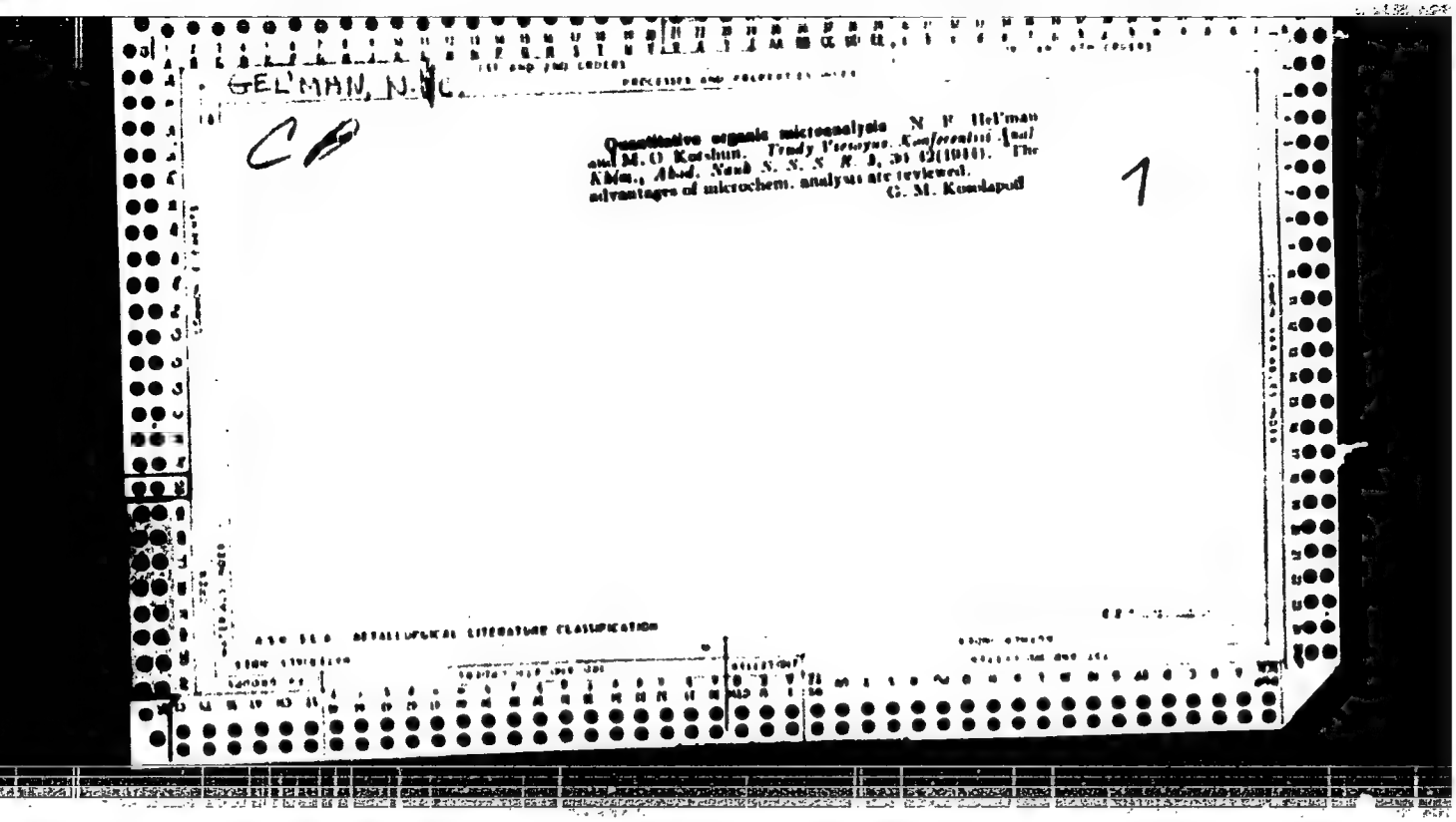


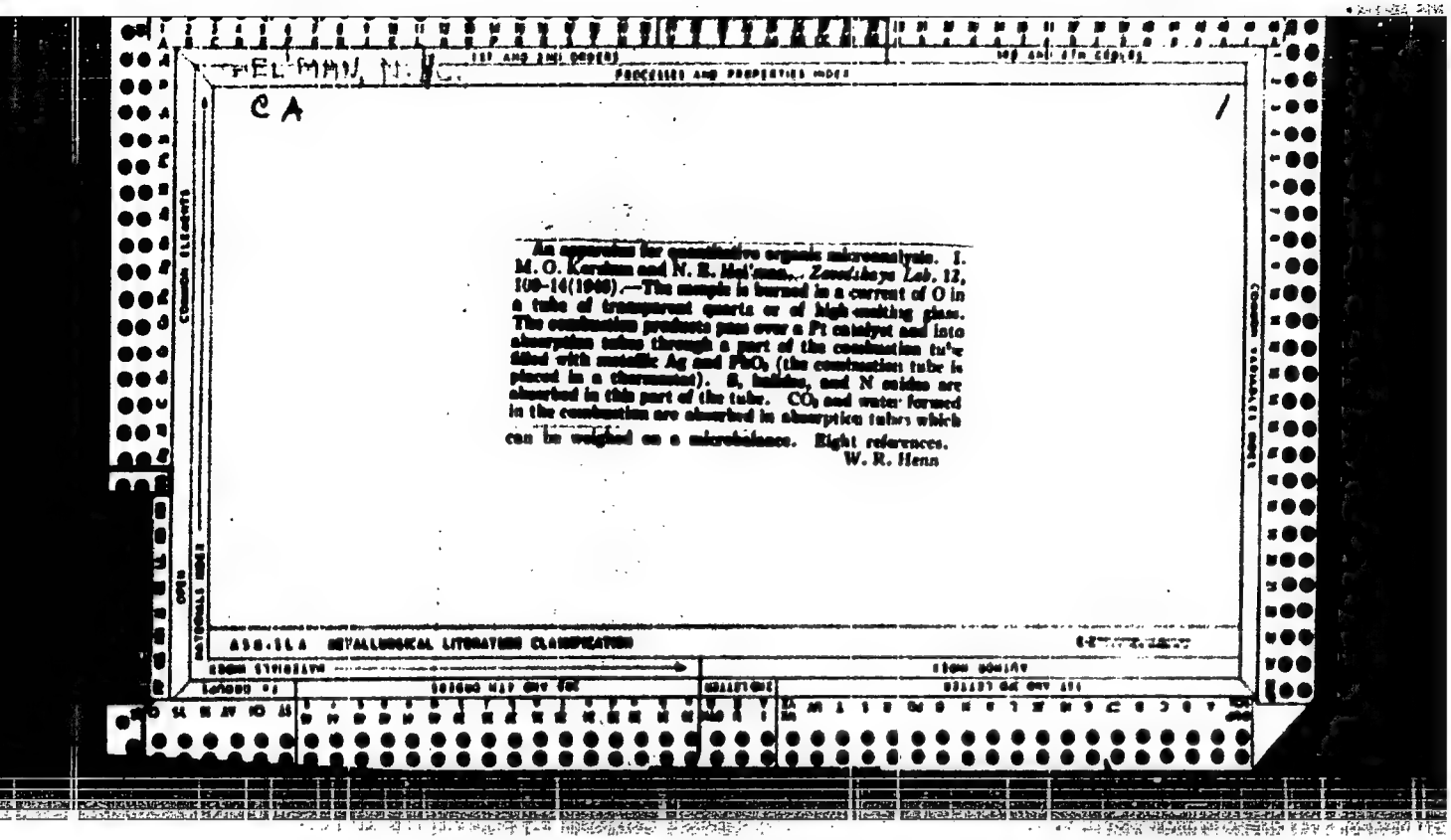
CA

Microdetermination of sulfur in organic compounds S. P. Gel'man. *Zavodskaya Lab.* 8, 623 (1939). In a modified Mrukra method (cf. C. A. 30, 41[illegible]) a 3.5 mg. sample is heated in a Pt boat, the vapors of the org. compd. are passed with a stream of H_2 over a heated catalyst of rolled Pt gauze, the H_2S is absorbed in a buffered ZnSO4 soln. and the S is detd. iodometrically. The combustion tube contg. the Pt boat and Pt catalyst is 55 cm. long, 8-9 mm. in diam. (inside), and is made of quartz. The glass absorption tube was bent at 45° with the vertical end connected to the combustion tube and the inclined arm shaped into a series of bulbs. Detns. of S on 8 org. compds. showed close agreement with the theoretical values. The procedure and app. are described in detail. H. Z. K.

A50-51A METALLURGICAL LITERATURE CLASSIFICATION





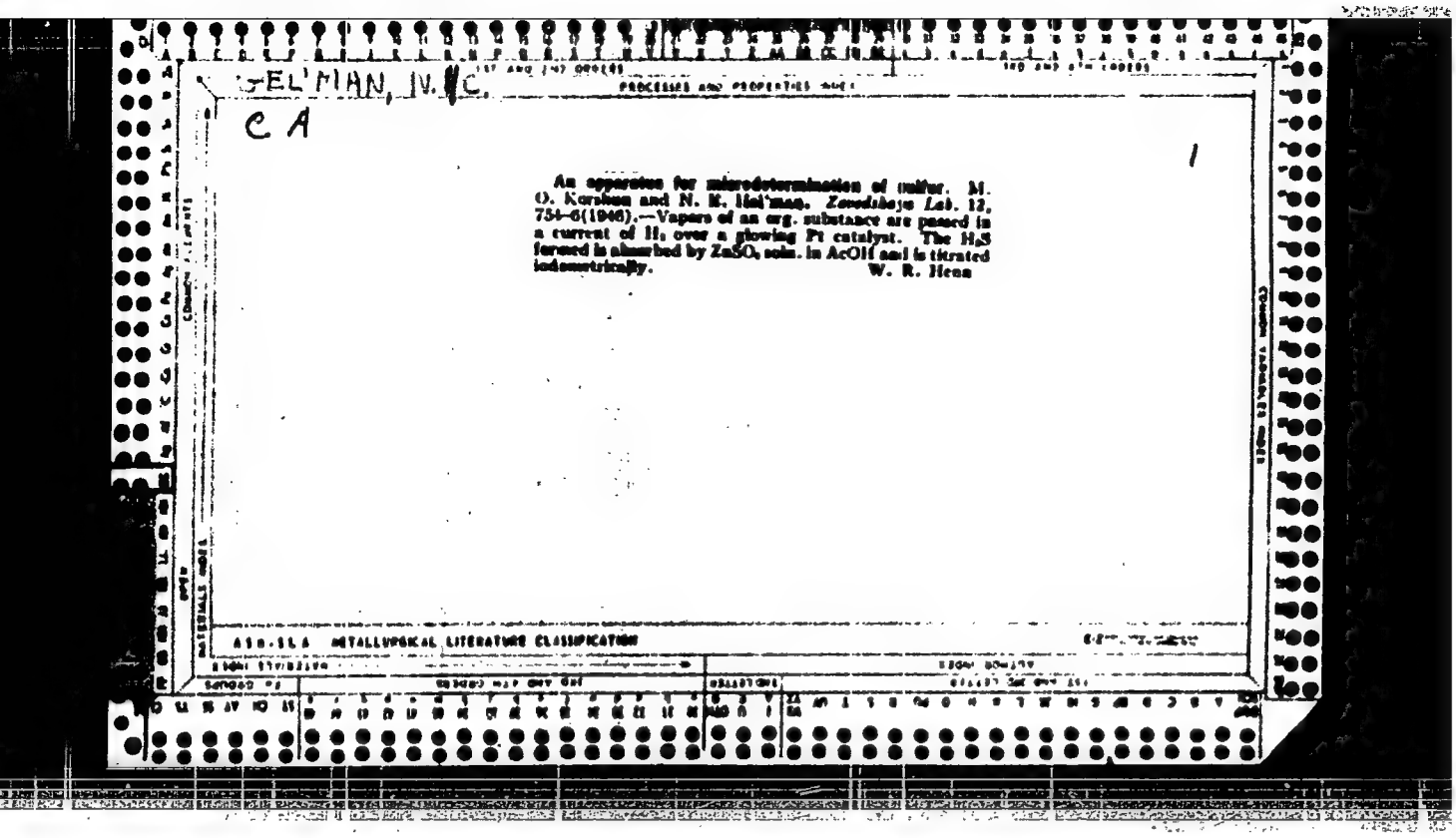


CA

An apparatus for quantitative organic microanalysis. I. M. O. Korshun and N. E. Hel'man. *Zavodskaya Lab.* 12, 108-14(1946).—The sample is burned in a current of O in a tube of transparent quartz or of high-melting glass. The combustion products pass over a Pt catalyst and into absorption tubes through a part of the combustion tube filled with metallic Ag and PbO_2 (the combustion tube is placed in a thermostat). S, halides, and N oxides are absorbed in this part of the tube. CO_2 and water formed in the combustion are absorbed in absorption tubes which can be weighed on a microbalance. Eight references.
W. R. Henn

GEL'MAN, N. E.

RT-1020 (Apparatus for direct microdetermination of oxygen. Communication II)
Apparatura dlia priamogo mikroopredeleniia kisloroda. Soobshchenie II.
Zavodskaia Laboratoriia, 12(4-5): 500-502, 1946.



GEL'MAN, N. E.

CA

An apparatus for microdetermination of sulfur. M. O. Korshun and N. E. Hel'man. *Zavodskaya Lab.* 12, 754–6(1946).—Vapors of an org. substance are passed in a current of H_2 over a glowing Pt catalyst. The H_2S formed is absorbed by $ZnSO_4$ soln. in AcOH and is titrated iodometrically. W. R. Heas

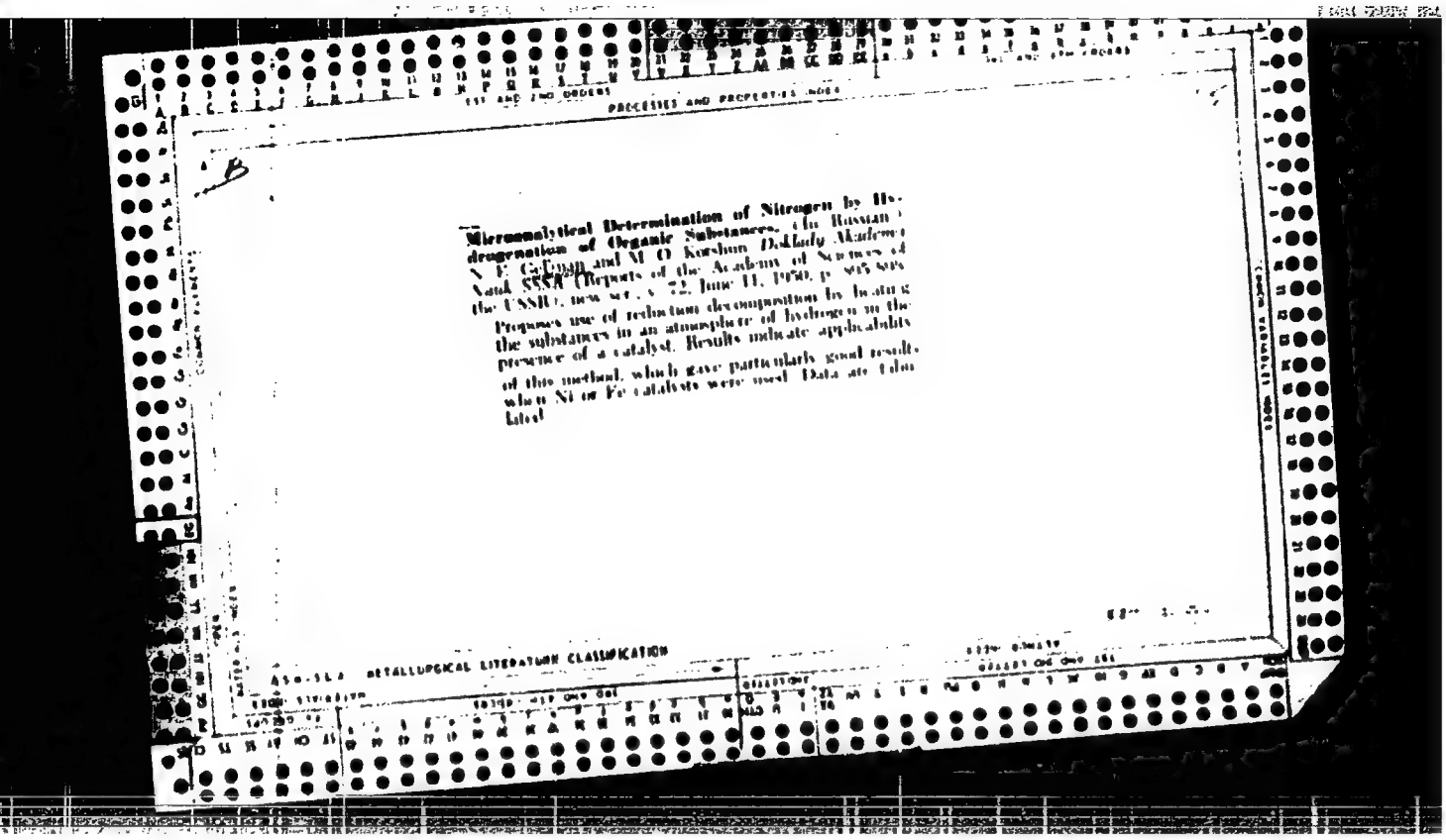
1

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

GEL MAN, N. E.

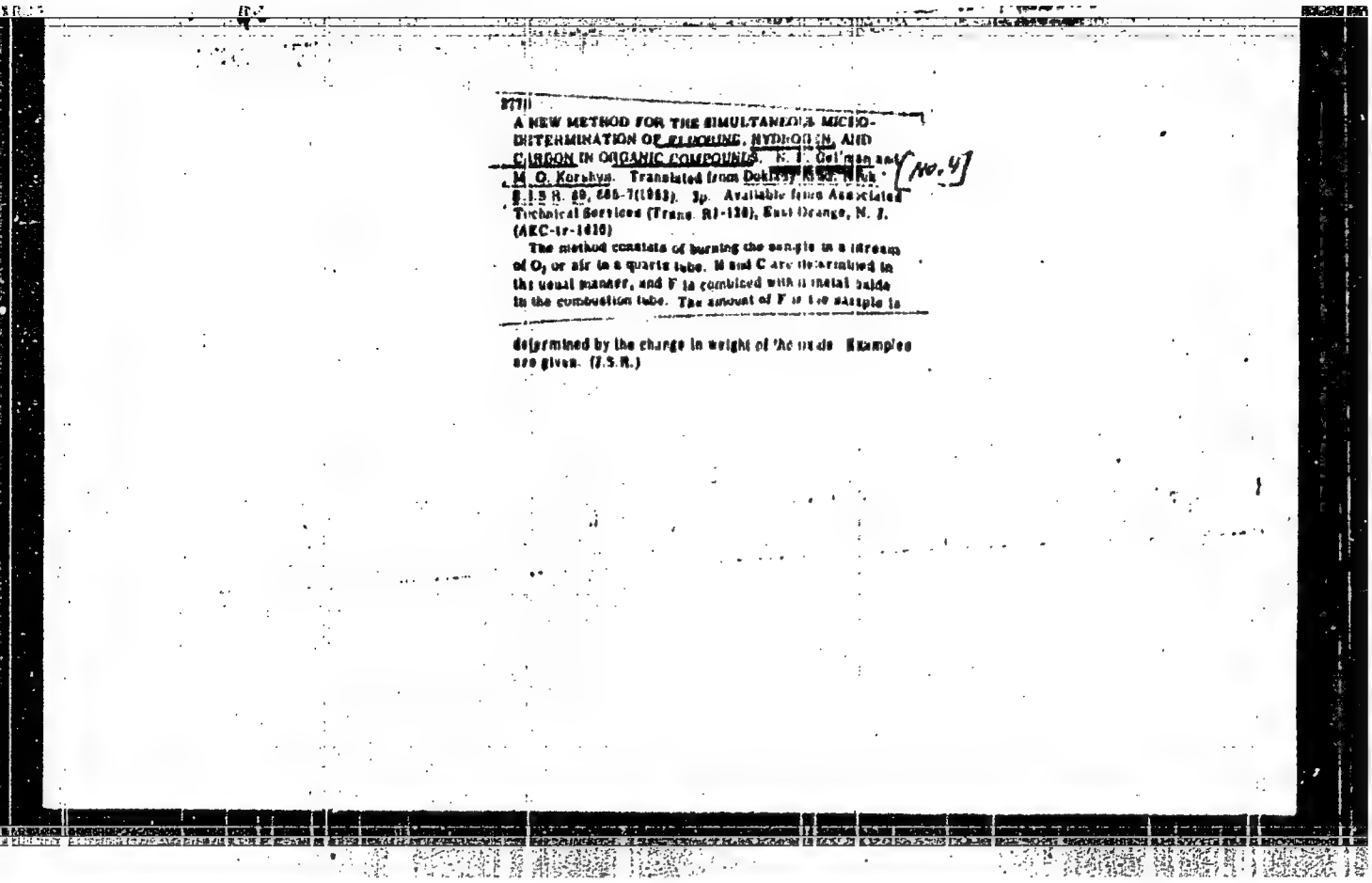
PROCESSES AND PROPERTIES INDEX

Korshun, M. O., and Gel'man, N. E.: Novye Metody Elementarnogo Mikroanaliza (New Methods of Elementary Microanalysis). Moscow-Leningrad: Goskhimizdat. 1949. R7 Kop. 60. Reviewed in *Uspekhi Khim.* 18, 375(1949).



Microanalytical Determination of Nitrogen by Hydrogenation of Organic Substances. (In Russian.) V F Gavrilyuk and M O Korshun. Doklady Akademii Nauk SSSR (Reports of the Academy of Sciences of the USSR), Vol. 77, No. 2, June 11, 1950, p. 265-268.

Proposes use of reduction decomposition in hydrogen of the substances in an atmosphere of hydrogen in the presence of a catalyst. Results indicate applicability of this method, which gave particularly good results when Ni or Fe catalysts were used. Data are tabulated.



8771

A NEW METHOD FOR THE SIMULTANEOUS MICRO-DETERMINATION OF FLUORINE, HYDROGEN, AND CARBON IN ORGANIC COMPOUNDS. K. I. Gel'man and M. O. Korshun. Translated from Doklady Akad. Nauk S.S.S.R. 89, 685-7(1953). 3p. Available from Associated Technical Services (Trans. RJ-138), East Orange, N. J. (AEC-tr-1610)

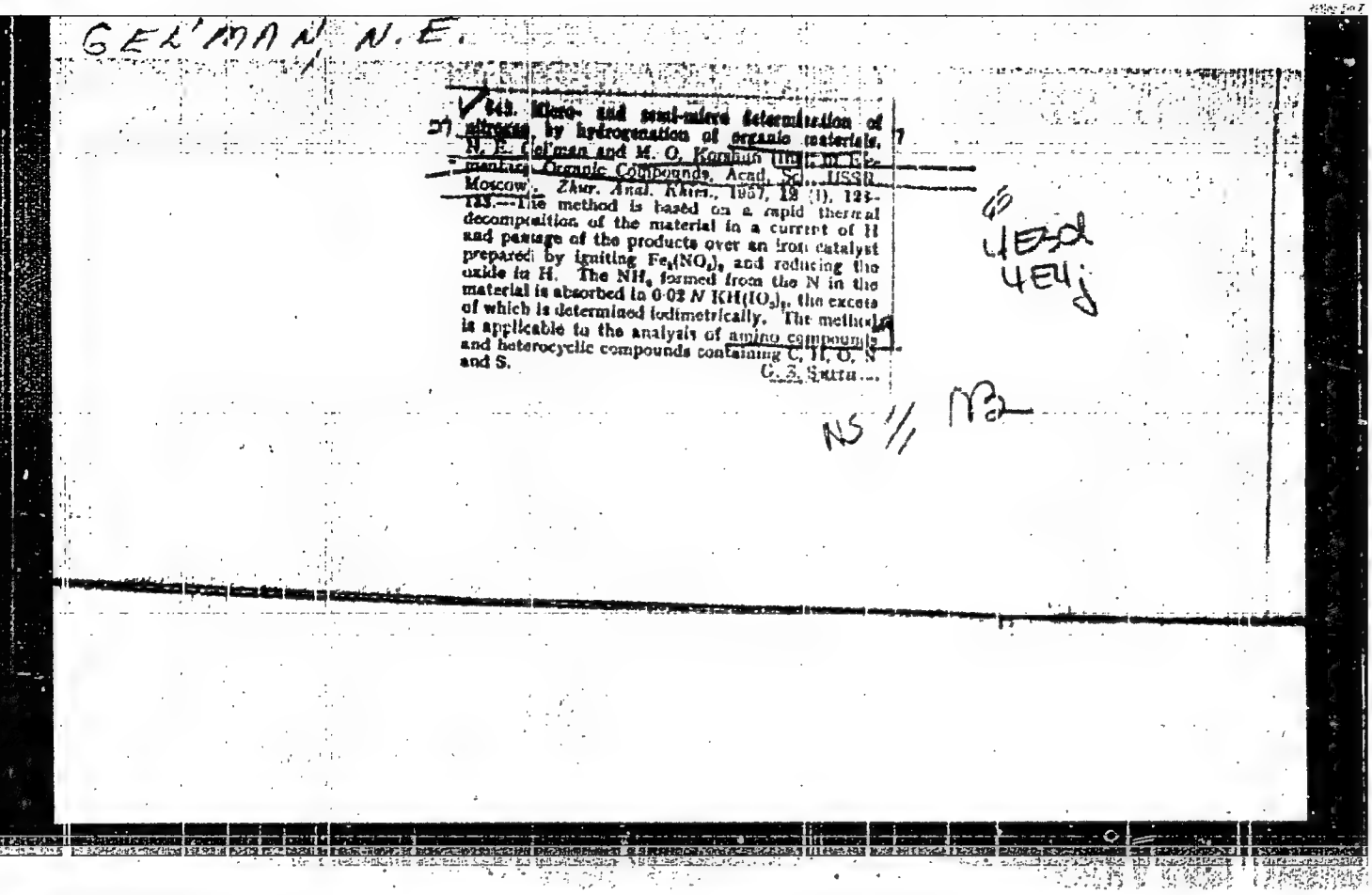
[No. 4]

The method consists of burning the sample in a stream of O_2 or air in a quartz tube. H and C are determined in the usual manner, and F is combined with a metal oxide in the combustion tube. The amount of F in the sample is determined by the change in weight of the oxide. Examples are given. (J.S.R.)

Gel'man, N. E.

Simultaneous microdetermination of fluorine, carbon, and hydrogen in heteroörganic compounds. M. O. Korshun, N. E. Gel'man, and K. I. Glazova. *Doklady Akad. Nauk S.S.S.R.* 111, 1255-6(1956); cf. *C.A.* 47, 3504h.—The sample (4-10 mg.) is burned in a stream of O_2 in a layer (15-18 cm. long) of granulated MgO kept at 1000° and held in a quartz cartridge with the perforated end placed in the empty combustion tube. The C and H detn. is made conventionally with absorption train while the cartridge of MgO is treated with steam at 1000°. The resulting HF is detd. by titration. The MgO can be reused after drying. If the sample contains elements such as P, B, or Si which are also retained by MgO, the detn. is unaltered, but in presence of halogens or S which form compds. with Mg that are hydrolyzable by steam, the titration of HF is possible only with Th nitrate. MgO retains S completely, Cl and Br only partially. A set of typical analyses are shown indicating the accuracy of about 0.2% or better for C, 0.1% for H, and 0.1-0.2% for F. G. M. Kosolapoff

fra. Rmaorg



GEL'MAN, N. E.

943. Micro- and semi-micro determination of nitrogen, by hydrogenation of organic materials. N. E. Gel'man and M. O. Kondina (Inst. of Chemistry of Organic Compounds, Acad. Sci., USSR, Moscow). *Zhur. Anal. Khim.*, 1957, 12 (1), 123-125.—The method is based on a rapid thermal decomposition of the material in a current of H and passage of the products over an iron catalyst prepared by igniting $Fe_4(NO_3)_3$ and reducing the oxide to H. The NH_3 formed from the N in the material is absorbed in 0·02 *N* $KH(IO_3)_2$, the excess of which is determined iodimetrically. The method is applicable to the analysis of amino compounds and heterocyclic compounds containing C, H, O, S and S.

C. S. Sutta...

GEL'MAN, N. Ye.; KORSHUN, M. O.; SHEVELEVA, N. S.

Rapid methods of elementary microanalysis. Report No. 14: Determining microquantities of carbon and hydrogen in fluorine organic compounds [with summary in English]. Zhur.anal.khim. 12 no.4:526-533 Jl-Ag '57. (MIRA 10:10)

1.Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva.
(Carbon) (Hydrogen) (Fluorine organic compounds)

5(3)

AUTHORS: Korshun, M. O., Gel'man, N. E., Sheveleva, N. S.

SOV/75-13-6-16/21

TITLE: Rapid Methods of Micro-Elementary Analysis (Skorostnyye metody mikroelementarnogo analiza) Communication 15. On the Problem of Simultaneous Micro-Determination of Carbon, Hydrogen, and Halogens in Organic Compounds (Soobshcheniye 15. K voprosu ob odnovremennom mikroopredelenii ugleroda, vodoroda i galoidov v organicheskikh soyedineniyakh)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 6, pp 695-701 (USSR)

ABSTRACT: It was established in earlier papers (Refs 1-4) that the presence of halogens or of compounds containing halogens in the combustion of organic substances hinders oxidation of carbon to CO_2. Therefore, a platinum contact must be used in this case for the quantitative oxidation. Recently, the authors developed a method for burning in a so-called "hull" which allows to improve the determination of C, H and halogens considerably (Ref 5). A new variant of this method is described in the present paper. In the vessel containing the weighed portion, silver, and the

Card 1/4

oxidation zone follow one another in the combustion tube in the direction of the gas current. Both silver and the vessel containing the weighed portion are placed in a thin hollow quartz hull, which is weighed out after combustion. In this case no platinum contact is required in the oxidation zone (Ref 4) and the adoption of the hull allows the silver to be weighed out. The hull weighs about half of the former massive appliance and therefore secures a far better reproducibility of halogen determination. No combustion tubes with ground apparatus are required any longer. Tube life is also prolonged, as it cannot be corroded by the silver contained in the hull. Pure metallic silver in the form of a foil, a net or a wire is used for the absorption of halogens. Only 1.5 g Ag are required, which is much less than the formerly used appliance called for. The silver layer is heated to 550-600° by means of a MAG-6R electric burner. From 30 to 40 determinations can be carried out with the used amount of silver. A temperature increase from 425 to 575° causes the absorbability of silver to increase considerably. In the case of temperatures being low to an extent at which it is

not possible to work with an Ag net or foil, other large surface silver preparations have a good absorbability. In this connection the authors investigated silvered pumice, as silver deposited upon a porous carrier efficiently absorbs halogens and corrodes the quartz hull much less than metallic silver. A granulated, silvered pumice prepared according to Sokolova's method (Ref 7) was highly suitable for the determination. Absorbability of this preparation is almost twice that of electrolytic silver (Ref 6). Halogen absorption may thus be carried out at 425° instead of at 575° , in which connection corrosion on the hull is so slight that it can be repeatedly used again. Carrying out of this new determination method as well as the results of the several analyses are accurately described. This method can also be used for the determination of C, H, and S and for that of some other elements from a weighed portion. There are 3 figures, 7 tables, and 14 references, 13 of which are Soviet.

Rapid Methods of Micro-Elementary Analysis. Communication 15. On the Problem of Simultaneous Micro-Determination of Carbon, Hydrogen, and Halogens in Organic Compounds

SOV/75-13-6-16/21

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva (Institute of Organic Elemental Compounds of the Academy of Sciences, USSR, Moscow)

SUBMITTED: September 12, 1957

Card 4/4

5(2,3)

AUTHORS: Gel'man, N. E., Korshun, M. O., Chumachenko, M. N., Larina, N. I.

SOV/20-123-3-24/54

TITLE: Analysis of Organofluoric Compounds (Analiz ftororganicheskikh soyedineniy)Simultaneous Micro-Determination of Fluorine and Nitrogen in Organic Compounds (Odnovremennoye mikroopredeleniye ftora i azota v organicheskikh soyedineniyakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 3, pp 468-470 (USSR)

ABSTRACT: In previous papers by the authors (Refs 1, 2) it was found that magnesium oxide in the elementary analysis of organofluoric compounds is a reliable reagent for a quantitative linkage of fluorine which is separated out in decomposition of organic substances. Moreover, they proved that in fluorine, absorbed by MgO, can be quantitatively isolated from the absorbing layer as HF by the hydrolytic decomposition of magnesium fluorine by vapor at a high temperature (Ref 3). This so-called pyrohydrolysis proceeds as follows: $MeF + H_2O \rightarrow MeO + HF$. On account of this result, an experiment was carried out with the process mentioned in the subtitle. For this purpose the

modification of nitrogen-determination by Dumas (Lyuma) was used, which had been worked out by the second and the third authors. In this process the measured amount was burned by means of pyrolysis in a layer of nickel oxide. Nickel oxide did not disturb the pyrohydrolytic determination of fluorine (Ref 5). Table 1 shows the results of the determination of fluorine by combustion at 900° - 950° in a CO_2 atmosphere in an electric furnace (length: 6 cm). 3-8 mg of the substance were used, which were covered by a layer of granulated nickel oxide in a quartz tube. For the pyrohydrolysis a tube was used that had been suggested by N. E. Gel'man and K. I. Glazova. The pyrohydrolysis takes 20-25 minutes. Accuracy of the determination: nitrogen 0.2%, fluorine up to 0.5% absolute. The results are shown in table 2. The authors were the first to carry through this determination. There are 2 tables and 6 references, 5 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemento-Organic Compounds of the Academy of Sciences, USSR)

AUTHOR: Bilimovich, G. N. SOV/75-14-4-30/30

TITLE: Session of Analytical Chemistry of the VIII Mendeleyev Congress on General and Applied Chemistry

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 4, pp 511-512 (USSR)

ABSTRACT: Approximately 300 persons participated in the work of the Department of Analytical Chemistry, among them representatives of various scientific research institutes, higher schools and industrial enterprises in Russia, scientists from China, Bulgaria, the CSR, Poland, Hungary, and Italy. Approximately 70 reports were heard. In his opening speech I. P. Alimarin reported on the achieved results and on modern problems of analytical chemistry. I. V. Tananayev reported on the application of physico-chemical analysis in heterogeneous systems for the solution of a series of problems of analytical chemistry. V. I. Kuznetsov reported on modern aims in the use of organic reagents. A. K. Babko showed at the example of halide and thiocyanate complexes the correlation between the stability of complexes and the position of the corresponding central atoms in the periodic system. V. M. Peshkova and V. M. Bochkova lectured on the stability of oximates of Cu, Co, and Ni as depending on the structure of the oxime molecule. N. P. Yermanova lectured on the double character of reaction of some compounds in the formation of complexes. The problem of the application of heteropolyacids in analytical chemistry was dealt with in the lectures of L. P. Shakhova and co-workers, and A. I. Kokorin and N. A. Polotebnova. A large number of lectures dealt with the use of new organic reagents in analysis: A. I. Busev and M. I. Ivanyutin reported on the application of dialkyl and diaryl dithio-phosphoric acid for the separation of elements. A. L. Pazinov used aryl arsonic acid and aryl phosphinic acid. R. P. Lastovskiy and his co-workers treated some properties of new complexons. The lectures of V. A. Nazarenko, G. G. Shitareva and A. I. Kononenko dealt with the photometric determination of a series of elements using fluorine derivates. A. T. Cherkesov lectured on the use of halochromation in analytical chemistry. D. M. Dobkina and T. M. Malyutina lectured on the determination of tantalum using differential spectrophotometry. Yu. V. Morachevskiy and I. A. Stolyarova reported on new highly sensitive analysis methods using an ultraviolet microscope. Several lectures dealt with methodical and theoretical problems of spectrum analysis (S. V. Zakharty and G. A. Shernin; N. Ya. Tarnshtern and co-workers). N. S. Poluektov and M. N. Nikonova treated the perfection of flame photometry. Several lectures dealt with the determination of elements by polarography (S. I. Sinyakova; E. N. Rozhdestvenskaya and I. A. Tarutay; Ya. P. Gokhshteyn). New results in using fixed electrodes were reported by I. D. Panchenko and Yu. S. Lyalikov and co-workers. The lecture of N. I. Udal'tsova and P. N. Paley treated the use of amperometric titration with two electrodes in the chemistry of uranium and thorium. K. M. Senyavin showed possibilities of predicting the conditions of chromatographic separation of elements based on their position in the periodic system. T. A. Belyavskaya reported on the use of ion exchange in the investigation of the state of substances in solutions. A. S. Vernidub and V. I. Petrashen' lectured on the chromatographic separation of a series of elements. N. G. Polyanskiy reported on adapting the properties of ion exchanger resins. P. N. Shemyakin and associates reported on the chromatographic proof of sulfanilamide preparations in liquids of the organism. G. L. Starobinets and associates treated the application of high polymers in chromatographic analysis. The lecture of A. A. Zhukhovitskiy and N. M. Turkel'taub, G. Shay dealt with gas chromatography. Several lectures treated the use of radioactive isotopes for the chromatographic investigation of complex formation (D. I. Ryabchikov and associates), for the investigation of the co-precipitation mechanism of ions of rare metals with sulfides (N. A. Rudnev) and for determining rare elements by means of isotope dilution (I. P. Alimarin, G. N. Bilimovich). In the field of elementary organic microanalysis the lectures of M. O. Korshun, V. K. Gel'man and V. A. Klimova with associates have to be mentioned, who treated the elaboration of rapid micromethods for the simultaneous determination of several elements from one weighed portion of boron, fluorine and silicium-organic compounds.

Card 1/4

Card 2/4

Card 3/4

vy

Getm AN, N. 3

N.E.

U.5239

SOV/79-15-1-19/29

AUTHORS: Korshun, M. O. (deceased), Sheveleva, N. S., Gel'man, N. E.

TITLE: Rapid Methods of Microanalysis. Communication 17. Simultaneous Determination of Carbon, Hydrogen, Mercury, and Halogen in a Single Sample of Organic Substance

PERIODICAL: Zhurnal analiticheskoy khimii, 1960, Vol 15, Nr 1, pp 99-103 (USSR)

AESTRACT: The article describes determination of mercury and halogen (or sulfur) since carbon and hydrogen are determined by the usual methods. An organic sample is subjected to rapid pyrolytic combustion in which the resulting mercury vapors are retained by gold (thin wire or foil) and halogen by silver (screen, wire, or foil) Silvercoated pumice cannot be used since it retains part of the mercury and distorts the experimental results. After the retention, mercury and halogen are determined gravimetrically. The experimental error is not more

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than 0.6 to 0.7% for mercury, and less for halogen. It was found that mercury can also be determined in substances containing nitrogen, since no mercury nitrate is formed during the rapid combustion. There are 3 tables; 4 figures; and 13 references, 4 German, 8 Soviet, 1 U.K. The U.K reference is: Heron, A. E., Analyst, 72, 142 (1947).

ASSOCIATION: Institute of Element-Organic Compounds, Academy of Sciences, USSR, Moscow (Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva)

SUBMITTED: December 13, 1958

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GEL'MAN, N.E.; KORSHUN, M.O. [deceased]; NOVOZHILOVA, K.I.

Analysis of fluorine organic compounds; use of pyrohydrolysis for the simultaneous micro determination of fluorine, carbon, and hydrogen. Zhur.anal.khim. 15 no.2:222-226 Mr-Ap '60. (MIRA 13:7)

1. Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva.
(Fluorine organic compounds)
(Fluorine--Analysis)
(Carbon--Analysis)
(Hydrogen--Analysis)

GEL'MAN, N.E.; KORSHUN, M.O. [deceased]; NOVOZHILOVA, K.I.

Analysis of fluoroorganic compounds. Simultaneous microdetermination of fluorine, carbon, and hydrogen. Zhur.anal.khim. 15 no.3:342-346 My-Je '60. (MIRA 13:7)

1. Institute of Elemento-Organic Compounds, Academy of Sciences, U.S.S.R., Moscow.
(Fluorine--Analysis) (Carbon--Analysis)
(Hydrogen--Analysis)

S/075/60/015/004/022/030/XX
B020/B064

AUTHORS: Gel'man, N. E. and Van Ven'-yun'

TITLE: Conductometric Microdetermination of Carbon and Hydrogen in Organic Compounds

PERIODICAL: Zhurnal analiticheskoy khimii, 1960, Vol. 15, No. 4, pp. 487 - 494

TEXT: In working out a method for the conductometric determination of the combustion products of carbon and hydrogen, the existing variants of the carbon determination method (at a low carbon content) in organic substances were adapted to an accuracy of 0.2 - 1% by a cell for measuring the electrical conductivity. The basis for the conductometric determination of hydrogen was its reaction with carbon at high temperatures in an inert medium; in the present case it served to determine the hydrogen and carbon in the organic substance from one weighed portion. The determination is carried out in two stages: the organic substance is first burned in an empty tube in the oxygen current, the resulting water obtained is frozen out with a dry ice - acetone mixture, and CO_2 introduced with dilute lye

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into the cell. The frozen water is passed in nitrogen or argon current over a red-hot layer of platinized carbon black, where the oxygen of the water reacts with carbon under the formation of CO, which oxidizes to CO_2 over heated Cu_2O, and is also passed into the cell. Both carbon and hydrogen are determined by the change of conductivity of the absorption solution. The reproducibility of conductometric carbon and hydrogen determination is better than that of their gravimetric determination. Moreover, this method permits to follow the combustion process of the weighed portion in time, and automate the measurement of conductivity. The suggestion is made to carry out the combustion process automatically at high temperatures and great oxygen excess. 65 organic compounds were analyzed by this method (cf. Table 1). The apparatus used to burn and determine carbon (Fig. 1), and to convert water (Fig. 2) are described. The device used to determine the electrical conductivity is designed according to the Wheatstone bridge, and consists of a ЗГ-10 (ZG-10) sound generator as a.c. source, an МТВ (MTV) d.c. bridge, three resistors as arms of the Wheatstone bridge, an МЕ-3 (MYe-3) capacitor for compensation and self-induction, an ЭО-7 (EO-7) electron oscillograph as zero

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instrument, and two cells to measure the electrical conductivity, which were modified in accordance with the requirements made (Fig. 3). The results of checking the quantitative CO_2 absorption in the measuring cell are listed (Table 2). Platinized carbon black with a 50% Pt content was obtained by a method of Ye. A. Bondarevskaya (Ref. 23). The weighing in, the course of analysis when a 0.01 N $Ba(OH)_2$ solution is used and a 0.01 N NaOH solution as absorbent are described; then, a practical example is calculated. The authors thank N. A. Balashova for valuable advice and interest in the work, and Yu. S. Solomatin for mounting the electrical measuring apparatus and designing the automatic rotary furnace. There are 3 figures, 2 tables, and 30 references: 17 Soviet, 7 German, 1 French, 3 Austrian, and 2 US.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva (Institute of Elemental-organic Compounds of the AS USSR, Moscow)

SUBMITTED: January 25, 1960

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S/075/60/015/005/024/026/XX
B002/B056

11.2214

AUTHORS: Gel'man, N. E., Korshun, M. O. (Deceased), and Novozhilova, K. I.

TITLE: The Analysis of Organofluorine Compounds. I. The Simultaneous Micro Determination of Fluorine, Carbon and Hydrogen in Low-boiling and Gaseous Compounds

PERIODICAL: Zhurnal analiticheskoy khimii, 1960, Vol. 15, No. 5, pp. 628-634

TEXT: The essential difficulty in the analysis of low-boiling compounds consists in the fact of having to determine an exactly weighed substance and conveying it without losses into the combustion tube. The authors show that substances with a boiling point of 20°C may still be weighed in an open quartz capillary - diameter of the opening from 0.2 to 0.3 mm - ; the losses e.g. at 3,3,3,2,1-pentafluoropropane (boiling point 20°C) amount to 0.024 mg per minute with a weighed portion of 4 mg. If the evaporation rate is known, the losses may be corrected in the time between

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The Analysis of Organofluorine Compounds. The Simultaneous Micro Determination of Fluorine, Carbon and Hydrogen in Low-boiling and Gaseous Compounds

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the weighing and conveying into the combustion tube. The following substances were determined according to this method: 1-ethylfluoroisobutylene $C_6H_5F_7$; 1-bromine-2-hydroperfluoro-isobutane C_4HBrF_8; 3,3,3,1-tetrafluoro-2-trifluoromethylpropane $C_4H_3F_7$; 1,2-dihydroperfluoroisobutane $C_4H_2F_8$; 3,3,3,2,1-pentafluoro propane $C_4H_3F_5$. For substances with a lower boiling point (between +20° and -45°C), an improved "opener" according to Yu. N. Dagayeva and K. I. Novozhilova was used. The substance is conveyed into a bulged capillary, whose outer walls are cooled by means of a freezing mixture. The capillary is sealed, weighed, and broken in the combustion tube by opening the oxygen faucet. The following substances were determined by means of this method: monohydroperfluoroisobutylene C_4HF_7; monohydroperfluoroisobutane C_4HF_9; 3,3,3,2,1,1 hexafluoropropane $C_3H_2F_6$; monohydroperfluoropropane C_3HF_7; 3,3,3,2,1 pentafluoropropene-1

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The Analysis of Organofluorine Compounds. The Simultaneous Micro Determination of Fluorine, Carbon and Hydrogen in Low-boiling and Gaseous Compounds

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C_3HF_5; hexafluoroacooxymethane $C_2F_6N_2O$; trifluoronitromethane CF_3NO_2; difluorochloromethane $CHClF_3$; 3,3,3-trifluoropropine-1 C_3HF_3; 1,1,2-trifluoroethene C_2HF_3. For substances having a lower boiling point than -45°C, an ordinary gas burette is used, by means of which the following substances were once again determined: hexafluoroacooxymethane, trifluoronitromethane, difluorochloromethane, 3,3,3-trifluoropropine-1, 1,1,2-trifluoroethene. There are 6 figures, 3 tables, and 18 references: 5 Soviet, 7 US, 5 British, and 1 German.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva (Institute of Elemental-organic Compounds AS USSR, Moscow)

SUBMITTED: April 13, 1959

Card 3/3

TERENT'YEV, A.P., otv.red.; ALIMARIN, I.P., red.; GEL'MAN, N.E., red.; KLIMOVA, V.A., red.; KRESHKOV, A.P., red.; KUZNETSOV, V.I., red.; LEVIN, E.S., red.; PODGAYSKAYA, Z.I., red.; RUKHADZE, Ye.G., red.; TAL'ROZE, V.L., red.; TSUKERMAN, A.M., red.; SHEMYAKIN, F.M., red.; SHEYNKER, Yu.N., red.; YERMAKOV, M.S., tekhn.red.

[Conference on organic analysis] Soveshchanie po organicheskomu analizu. Tezisy dokladov. Moskva, Izd-vo Mosk.univ., 1961. 170 p. (MIRA 14:4)

1. Soveshchaniye po organicheskomu analizu. 1961.
(Chemistry, Analytical—Congresses)
(Chemistry, Organic—Congresses)

S/032/61/027/001/005/037
B017/B054

AUTHORS: Gel'man, N. E., Van Ven'- yun', and Bryushkova, I. I.

TITLE: Use of Conductometry for a Direct Microdetermination of Oxygen in Organic Compounds

PERIODICAL: Zavodskaya laboratoriya, 1961, Vol. 27, No. 1, pp. 24-28

TEXT: A direct conductometric microdetermination of oxygen was developed according to the method by M. O. Korshun and Ye. A. Bondarevskaya (Refs. 10, 11). The organic compound is thermally decomposed in a nitrogen- or argon atmosphere; the resulting gaseous reaction products are allowed to pass over platinized carbon black at 900°C, the oxygen is quantitatively transformed to CO. The resulting carbon monoxide is oxidized by copper monoxide to CO_2 at 300°C, and is absorbed in an alkaline solution. The resulting carbon dioxide is determined by the change in electrical conductivity of the absorption solution. For a quantitative oxidation, a 3.5 cm long contact layer is required, and the gas flow velocity must not exceed 10-12 ml/min. Numerous organic compounds of

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different structures and compositions were analyzed; results are compiled in Tables 1 and 2. An analysis takes 30-35 minutes. The percent oxygen content in organic compounds was determined by a calibration curve shown in Fig. 3. The oxygen amount in γ is plotted on the abscissa, the decrease in electrical conductivity of the absorption solution on the ordinates. There are 3 figures, 2 tables, and 11 references: 6 Soviet and 5 German.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds, Academy of Sciences USSR)

Card 2/2

GEL'MAN, N.E.; SHANINA, T.M.

Quantitative analysis of heteroorganic compounds. Microdetermination of phosphorus. Zhur.anal.khim. 17 no.8:998-1004 N '62. (MIRA 15:12)

1. Institute of Heteroorganic Compounds, Academy of Sciences, U.S.S.R., Moscow.
(Phosphorus—Analysis) (Phosphorus organic compounds)

GEL'MAN, N.E.; BRYUSHKOVA, I.I.

Elemental analysis of organometallic compounds igniting in air. Simultaneous microdetermination of carbon, hydrogen, and aluminum or some other element as an oxide. Zhur. anal. khim. 19 no.3:369-374 '64. (MIRA 17:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva.

GEL'MAN, N.E.; LARINA, N.I.

Elemental analysis of organofluorine compounds. Simultaneous microdetermination of fluorine, chlorine, and nitrogen. Zhur. anal. khim. 19 no.5:593-597 '64. (MIRA 17:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva.

SHANINA, T.M.; GEL'MAN, N.E.; KIPARENKO, L.M.

Quantitative analysis of organometallic compounds. Spectrophotometric microdetermination of silicon. Zhur. anal. khim. 20 no.1:118-125 '65. (MIRA 18:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva.

GELʹMAN, N.E.; SHEVELEVA, N.S.

Quantitative elementary analysis of [illegible]. III. [illegible] determination of carbon and hydrogen by burning [illegible] test tube. Zhur. anal. khim. 20 no.6:719-726 [illegible]

1. Institut elementoorganicheskikh [illegible].

GEL'MAN, N.E.; BRESLER, P.I.; RUZIN, B.N.; GREK, N.V.; SHEVELEVA, N.S.; MELENTYEVA, A.A.

New method for the automatic microdetermination of carbon and hydrogen in organic compounds. Dokl. AN SSSR 161 no.1:107-110 Mr '65. (MIRA 18:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Spetsial'noye konstruktorskoye byuro analiticheskogo priborostroyeniya AN SSSR. Submitted July 29, 1964.

GEL'MAN, N.F.

Fine planing instead of scraping. Stan.i instr. 24 no.10:24-25 O '53.
(MLRA 6:11)
(Planing machines)

GEL'MAN, M.L., inzhener.

Two cases of switching on moist generators. Elektrichestvo no.11:70 N '53. (MLRA 6:10)

(Dynamos)

1. Rostovenergo.

Gel'man, N. L.

AID P - 3526

Subject : USSR/Power Eng

Card 1/1 Pub. 26 - 20/30

Author : Gel'man, N. L., Eng.

Title : Decreasing the loss angle of oil without regeneration

Periodical : Elek. sta., 9, 55, S 1955

Abstract : The article describes the installation of a transformer with defective insulation the loss angle of oil became too great. A thermosyphon was installed and after 6 days the loss angle of oil was brought down to normal.

Institution : None

Submitted : No date

KURTSVAYL', G.I., inzhener; GEL'MAN, M.L., inzhener; DONIK, A.N., inzhener.

Defects of PS-600 circuit breakers. Energetik 4 no.8:9-10 Ag '56.
(Electric circuit brakers) (MLRA 9:10)

GEL'MAN, N.L., inzhener.

Simple device for measuring the distance between conductors at intersections of overhead lines. Energetik 4 no.10:27-28 O '56. (MLRA 9:11)

(Electric lines--Overhead)
(Optical instruments)

GEL'MAN, N. L., inshener.

Repairing a generator following breakdown of the stator winding during testing. Elek.sta.27 no.12:49-50 D '56. (MLRA 10:1)
(Electric generators)

GEL'MAN, N.L., inzhener; KURTSVAYL', G.I., inzhener.

Case of damage to a KRU cell with a VMG-133-II cutout. Elek. sta. 28 no.5:75-76 My '57. (MLRA 10:6)
(Electric transformers)

GEL'MAN, N.L., inzh.

Placing a damaged 40,000 kva. transformer into operation. Elek. sta. 32 no.2:76-77 F '61. (MIRA 16:7)
(Electric transformers)
(Electric power distribution)